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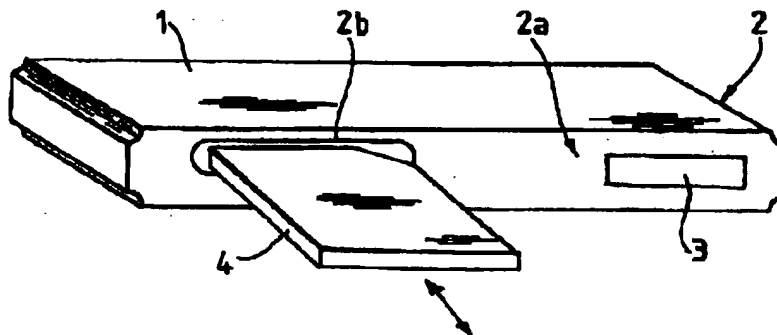
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 EP 1086479 A2 EP 0880681 A1
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(54) Abstract Title
 Electronic module

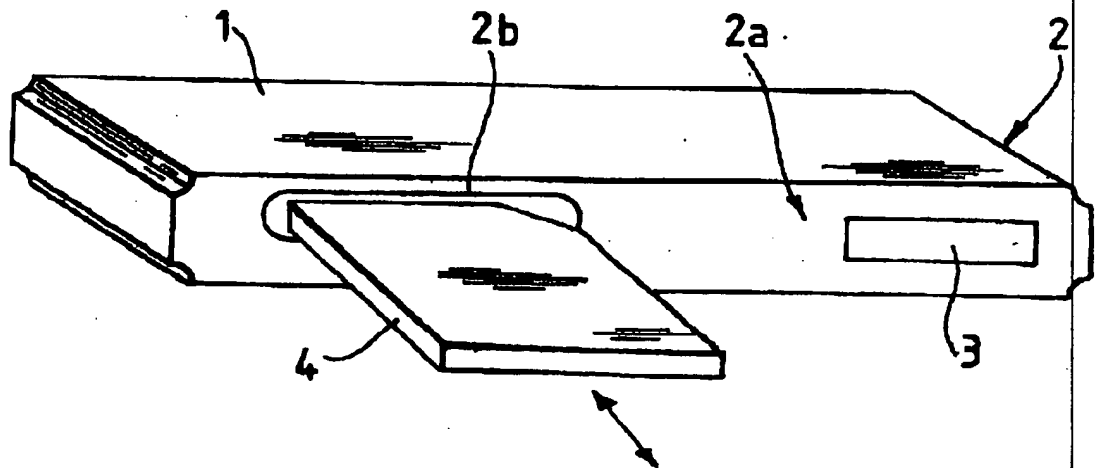
(57) A PC card (1), which can be positioned within a PC, comprises a casing (2), electronic circuitry mounted within the casing, and connection means for electrically connecting the electronic circuitry to electronic circuit means within the host device. An aperture (2b) is positioned in a wall at the front end (2a) end of the casing (2). The aperture (2b) is sized to receive a SIM card (4), and the electronic circuitry within the PC card is arranged to make contact with contact means formed on the SIM card.

The PC card module facilitates insertion and removal of the SIM card when the PC card is mounted with the PC host device.



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Electronic Module

This invention relates to an electronic module such as a PC card or a compact flash card, and in particular to a wireless PC card for use in a mobile telecommunications system.

A commercial mobile telecommunications service typically utilises a cellular network structure in which users communicate using mobile station terminal equipment (mobile handsets) and base transceiver stations located in the cells. In a modern system such as the GSM system (global system for mobile telecommunications), each mobile handset contains a subscriber identity module (SIM). The SIM is a smart card, and has a computer memory chip permanently installed thereupon. The SIM is a crucial element of the GSM system, in that it contains user specific information such as the identity of the user (the telephone number of the user), information to ensure that calls are billed to the user, information to enable the user identity to be verified by the network, information to provide security by voice encryption, and telephone numbers saved as short dial codes that are specific to the user. The SIM can also be used to contain other information defined by the network. In fact, the SIM is the only part of a mobile telephone which is truly personal to the user. Conventionally, a SIM card is installed semi-permanently within the handset of a mobile 'phone.

A PC card (previously known as a PCMCIA card) is a peripheral module which is commonly used in conjunction with a host device such as a personal computer (PC). In its most common form, a PC card comprises a printed circuit board (PCB) located in a slim casing, the PC card being pluggable into a peripheral port of a PC or other host device in order to perform a particular function. Thus, a wireless PC card might include a GSM transceiver for allowing an associated host device such as a PC or a personal digital assistant (PDA) to access the GSM wireless communications network. A PC card generally comprises a plurality of electronic components in the form of sub-circuits or sub-modules.



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A SIM card is usually in the form of either a credit-card size card (measuring approximately 85mm x 54mm x 0.8mm), or a smaller card (measuring approximately 25mm x 15mm x 0.8mm). Whatever form it takes, a SIM card has a small active area (for example a 6-way connector or an 8-way connector) provided on one face of the card for connection with contacting elements of the PC card circuit board or a separate SIM connector.

Typically, the SIM card of a mobile 'phone handset is inserted into the handset, and retained therein by some electro-mechanical connection within the housing of the handset. One of the features of a SIM card is that it is transferable between host devices. In particular, a SIM card can be transferred between different GSM handsets and other GSM products, thereby transferring account information from one host device to another, and allowing charge usage of multiple products to be entered on the one account.

Where a wireless PC card contains a GSM transceiver, the SIM card insertion function is difficult to implement. In particular, a PC card usually has to be extracted from an associated PC or other host device before the SIM card can be inserted into, or removed from, the PC card. Clearly, this complicates the transfer process of a SIM card between PC cards mounted in different host devices.

The aim of the invention is to provide a PC card which facilitates insertion and removal of a SIM card when the PC card is mounted within a host device.

The present invention provides an electronic module for positioning within a host device, the electronic module comprising a casing, electronic circuitry mounted within the casing, and connection means for electrically connecting the electronic circuitry to electronic circuit means within the host device, an aperture being positioned in a wall at one end of the casing, the aperture being sized to receive an auxiliary electronic device, and the electronic circuitry within the electronic module being arranged to make contact with contact means formed on the auxiliary device, wherein said casing wall is



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that end wall that faces the exterior of the host device when the module is positioned within the host device.

5 Preferably, the module further comprises a connector for electrically connecting the electronic module to an external device, the connector being positioned in said casing wall

10 In a preferred embodiment, the module is a PC card which is adapted for positioning within a PC, and said casing wall is the front wall of the casing.

Advantageously, a SIM card constitutes the auxiliary device, and the auxiliary device is retained within the electronic module by an electro-mechanical connection providing both mechanical retention and electrical contact to electrical contacts on the SIM card.

15 The invention will now be described in greater detail, by way of example, with reference to the accompanying drawing, the single figure of which is a perspective view of a PC card constructed in accordance with the invention.

20 Referring to the drawing, a PC card 1 has a casing 2 which houses a PCB (not shown) and a plurality of electronic components (not shown). The casing 2 is provided with an external connector 3 in its front face 2a, that is that face of the PC card casing which, in use, is accessible from the exterior of an associated host device (not shown). An aperture 2b is provided in the front face 2a, the aperture being sized to receive a SIM card 4 which measures approximately 25mm x 15mm x 0.8mm. As with prior art arrangements, the SIM card 4 is retained within the PC card 1 by an electro-mechanical connection (not shown) known per se.

30 When the PC card 1 is positioned within a host device (not shown) such as a PC, its casing front face 2a is accessible from the exterior of the host device. This permits insertion and extraction of the SIM card 4 without removal of the PC card 1 from the host device. This permits ~~one to change a SIM card easily from one host device to another, or from one account to another.~~ The casework of the PC card 1 can be used to



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aid mechanical retention of the SIM card 4, without requiring the provision of special mechanical holding devices.

The invention can be carried out by a simple modification to a standard PC card design.

- 5 Thus, only the front face of the PC card needs mechanical modification, and there is no need for a slot or hole to be provided in the main portion of the external casework of the PC card. The internal electronic circuitry within the PC card can also be simplified, as the SIM card reader contact and electronic circuitry associated therewith can be located towards the front of the PC card, out of the way of other internal circuitry.

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It will be apparent that the invention described above could be modified in a number of ways. In particular, it could be applied to any product which incorporates an extractable smart card, particularly where space constraints are of importance. It will also be appreciated that the external connector 3 is not an essential feature of the invention, being an optional device.

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Claims

1. An electronic module for positioning within a host device, the electronic module comprising a casing, electronic circuitry mounted within the casing, and connection means for electrically connecting the electronic circuitry to electronic circuit means within the host device, an aperture being positioned in a wall at one end of the casing, the aperture being sized to receive an auxiliary electronic device, and the electronic circuitry within the electronic module being arranged to make contact with contact means formed on the auxiliary device, wherein said casing wall is that end wall that faces the exterior of the host device when the module is positioned within the host device.
2. An electronic module as claimed in claim 1, further comprising a connector for electrically connecting the electronic module to an external device, the connector being positioned in said casing wall.
3. An electronic module as claimed in claim 1 or claim 2, wherein the module is a PC card which is adapted for positioning within a PC, and said casing wall is the front wall of the PC card.
4. A PC card as claimed in claim 3, wherein a SIM card constitutes the auxiliary device.
5. An electronic module as claimed in any one of claims 1 to 4, wherein the auxiliary device is retained within the electronic module by an electro-mechanical connection.





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Claims searched: 1-5

Examiner: S M Colcombe
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Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK CI (Ed.S): H1R (RBE, RBG, RBN)
Int CI (Ed.7): G06K, H05K
Other: Online: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	EP 1006479 A2 (STOCKO) Abstract & Fig 3	1-5
X	EP 0980561 A1 (GEMPLUS) Abstract	1-5
X	WO 00/67098 A1 (MICROSOFT) Abstract & Figs 2, 3.	1-5
X	WO 00/13126 A1 (INTERTEX) Whole document	1-5
X	WO 00/01210 A1 (STOCKO) Abstract & Figs 1, 1a	1-5
X	DE 29621835 U (CONSTIN) Abstract & Fig 1	1-5

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	B	Patent document published on or after, but with priority date earlier than, the filing date of this application.

